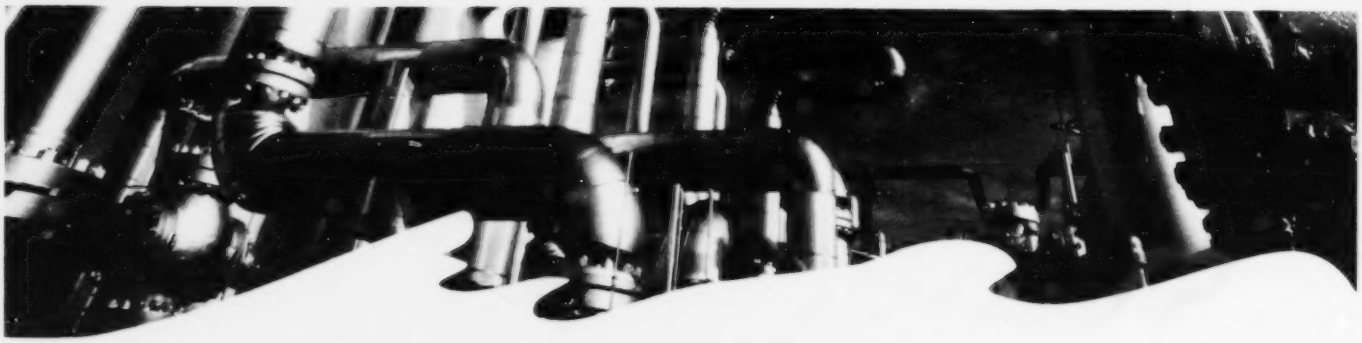


St. Lawrence TECHNOLOGIES

ABSTRACT

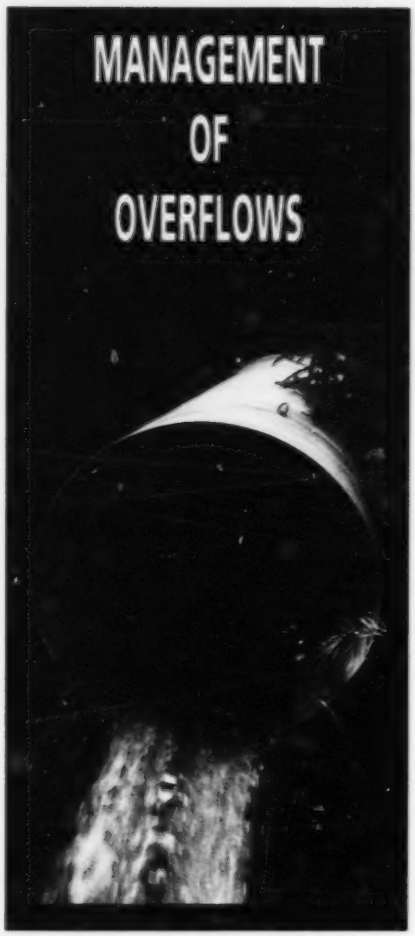
The development of the TP1000, an overflow recorder designed to improve monitoring, was undertaken making allowance for the increasingly rigorous standards of the ministère de l'Environnement et de la Faune (MEF), governing overflows from municipal sewer systems after heavy rains.

This new technology for managing stormwater having been developed, a demonstration project was launched to confirm the effectiveness of the TP1000, and to show its reliability and durability in actual use in a municipal sewer system.

Thus, twenty-three units were installed in the sewer system of the municipality of Terrebonne. Monitoring was done on a weekly basis and various performance data were compiled.

Saint-Laurent Vision 2000

INNOVATIVE TECHNOLOGY



MAIN FEATURES

- **Technology**
  - An overflow recorder capable of storing 32 000 data.
  - Four input channels registering data from probes placed at four different levels.
  - Definition of the duration and precise timing of occurrence of each overflow.
- **Environment**
  - Better monitoring of discharges of municipal or industrial wastewater overflows.
- **Economy**
  - Savings tied to monitoring of overflows of municipal sewer systems.
  - Reduction of costs of overflow management.
  - Acquisition of data at low cost.

Environment Canada Protection Québec Region
Environnement Canada Protection Région du Québec
Ville de Terrebonne
SERVICES
Federal Office of Regional Development (Québec)
Bureau fédéral de Développement régional (Québec)

PROJECT OBJECTIVES

1. **To verify the effectiveness of an overflow recorder under conditions of normal use.**

2. **To demonstrate the use, reliability and durability of the instrument in an actual sewer system.**

3. **To optimize the instrument's energy consumption.**

4. **To acquire data on the management of sewer overflows.**

BACKGROUND

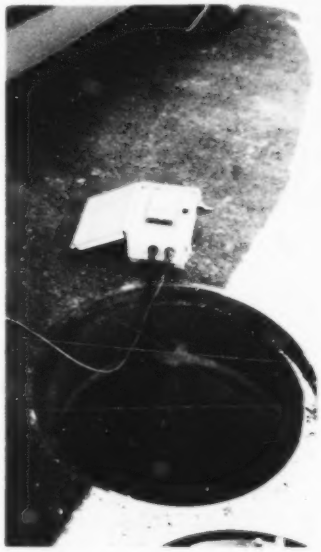
In Quebec, overflow discharges from municipal sewage systems are regulated by the MEF. Each municipality must conform to discharge criteria.

Until now, overflows have been monitored weekly by visual observation of the displacement of a gauge. Neither the timing of the occurrence of the overflow nor its duration can be precisely determined by this method. It is difficult, therefore, to estimate the impact of discharges on the natural environment.

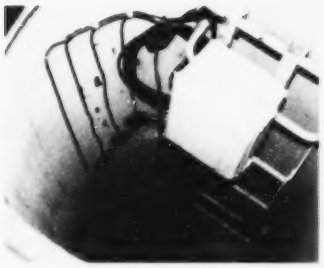
The TP1000 overflow recorder, conceived to acquire quantitative data on municipal and industrial wastewater overflows, solves this problem.

TECHNOLOGY

The TP1000 is a robust and reliable recorder of stormwater or industrial wastewater overflow. It can be adapted to either gravity- or pump-activated outfalls.



The TP1000 has been designed for installation in sewerage systems. Depending on the actual mode of installation, it can detect overflows at four different levels. It records the date, hour, and duration of the overflow at each of the levels.



The apparatus can store more than 32 000 data in memory. The readout of the TP1000 continuously indicates the number and duration of overflows registered on channel #1. A system of push-buttons allows display of overflows that have occured during the previous 17 days.

A more detailed data compilation is possible by querying the TP1000 using a portable computer. By this means one can obtain details of data recorded on all four channels.

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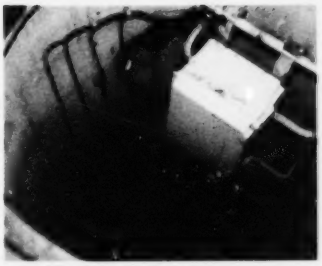

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RESULTS

Effectiveness of the apparatus
The installation of 23 units in the municipality of Terrebonne sewer system allowed testing the effectiveness of the TP1000. Fourteen units were installed in November 1995, and nine in March 1996.

During a period of five months (from July to November 1996), the units were inspected once a week. The compilation of data recorded by the units allows correlation between recorded overflows and either rainfall or system operations in 95% of cases.

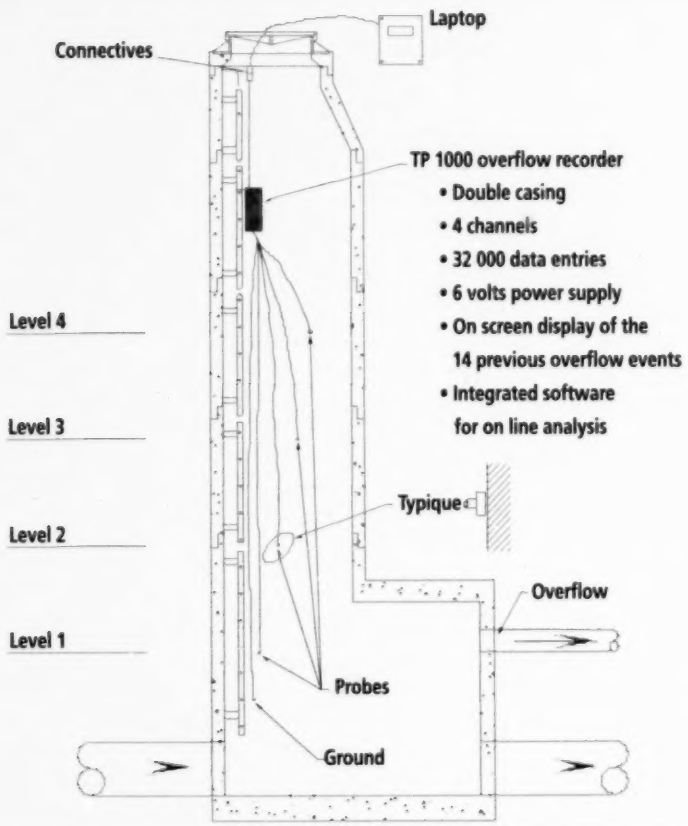
Moreover, monitoring permitted identifying overflow peaks for practically every rainfall episode. As well, the overflow discharge outfalls that never functioned could be identified.

Reliability of the apparatus
The units installed in November 1995 have been working for a year and have held up under winter conditions. Their performance does not differ from that of units installed in spring 1996.

Energy consumption
The anticipated working life of six months of units powered by six volt batteries has been verified. Despite sometimes difficult conditions of installation (such as high humidity) and winter use, the units lasted longer than was anticipated.

Data acquisition
The project permitted development of software for data acquisition, and preparation of a new version which allows data to be processed on a monthly basis for environmental monitoring needs.

TYPICAL INSTALLATION OF A TP1000 IN A SEWER MANHOLE



POTENTIAL AND LIMITATIONS

The TP1000 is a very interesting tool for adequately managing overflows. It allows the acquisition of quantitative measurements on phenomena which, up to now, could only be qualitatively described.

In light of the ever-growing concern of government authorities for the effective management of stormwater, the TP1000 proves to be an important tool for all managers of sewage systems.

In the near future the MEF expects to revise its policy on overflow monitoring so as to allow the acquisition of more precise data.

The TP1000 can be used to detect, at modest cost, an overflow and its magnitude. It is not a flow meter.

In industrial environments, where conditions are hostile (corrosion, humidity, etc.), the limits on the usefulness of this device have to be evaluated case by case.

Economic considerations
Municipal and industrial managers are the two users of this technology. Some cities have shown considerable interest in acquiring this equipment in order to reduce and optimize the costs of operating sewage systems.

The market for this equipment amongst municipalities and industries will open up when the government tightens regulations on overflows. The potential in Quebec, Canada and the United States is promising. It could potentially extend to every storm sewer overflow outfall; this would represent a phenomenal market.

INFORMATION

The information in this data sheet has been obtained from the results of a technology development and demonstration project carried out by the firm Maintenance de Systèmes d'Automatisation MSDA Inc., with financial support from Environment Canada's Technology Development and Demonstration Program (TDDP), the municipality of Terrebonne, through Quebec's wastewater treatment program, Enviroservices Inc. and MSDA Inc.

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St. Lawrence Technologies data sheets are intended for all companies, industries, organizations and individuals interested in new environmental technologies. They are produced by the Technology Development Section, Environment Canada, as part of St. Lawrence Vision 2000. They serve to disseminate the results of technology development and demonstration projects conducted in the following five sectors: industrial wastewater; contaminated soil; hazardous wastes; contaminated sediment and innovative technology.

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Canada

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